

9. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the dielectric insulating layer is used as a sacrificial layer in creating the air gap.

12. (amended) An integrated tunable RF resonator according to Claim 43, **characterized** in that the dielectric insulating layer on top of the capacitor electrode is silicon nitride.

13. (amended) An integrated tunable RF resonator according to Claim 43, **characterized** in that the dielectric insulating layer on top of the capacitor electrode is polymer.

14. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the second capacitor electrode is the ground electrode.

15. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the conducting layer interconnecting the inductor and the capacitor and/or the second capacitor electrode is metal film.

16. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the material of which the first conducting layer is constructed is selected from the group consisting of the following materials:

- refractory metal, such as Mo, W or TiW,
- metal, such as Au or Cu, or
- doped electrode in bulk silicon.

17. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the material of which the second conducting layer is constructed is selected from the group consisting of the following materials:

- metal, such as Au or Cu,
- polysilicon, or
- monocrystalline silicon.

18. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the third conducting layer is metal.

19. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the third conducting layer is a electroplated layer with a substantially larger thickness than the thickness of the first and second conducting layers.

20. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil is arranged with the second conducting layer and an electroplated metal layer on top of the conducting layer.

21. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil is arranged to be adjustable.

22. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil has several segments, and it is arranged to be adjustable by means to change the number of active segments in the coil.

23. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the segments of the inductor coil are changed by a micro-electro-mechanical switch realized in the same fabrication process with capacitors and inductors.

24. (amended) An integrated tunable RF resonator according to claim 43, **characterized** in that the inductor coil is a planar inductor coil.

27. (amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that a tuning signal is arranged to be fed through the tuning electrode.

28. (amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that, said second capacitor electrode is metal thin film.

29. (amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that the second capacitor electrode is folded and/or corrugated to at least two levels with respect to the first capacitor electrode.

30. A micromechanical tunable RF resonator according to claim 29, **characterized** in that the vertical portions of the folds and/or corrugates are fabricated thinner than the lateral portions of the second capacitor electrode.

31. (amended) A micromechanical tunable capacitor according to claim 45, **characterized** in that, the said arrangement is on a substrate.

32. (amended) A micromechanical tunable capacitor according to claim 31, **characterized** in that, the said substrate is a semiconductor material.

Please add the following claims:

43. (new) An integrated tunable RF resonator comprising an integrated inductor and a micromechanical tunable capacitor connected in series or in parallel, comprising  
a substrate (3),  
a substrate insulating layer (5),  
a first conducting layer (4) for forming a first capacitor electrode (8) and control electrodes (9) for applying a control voltage,  
a second conducting layer (6) for forming a second capacitor electrode (11a, 11b) that is movable with relative to the first capacitor electrode (8);

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a third conducting layer for forming at least part of the inductor coil;

wherein said control electrodes (9) are used to create an electrostatic force to said movable first electrode (8) for tuning the capacitance of the capacitor,

characterized in that

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a dielectric insulating layer (7) is used to at least partly cover said first capacitor electrode (8) to prevent the galvanic contact between said first capacitor electrode (8) and said second capacitor electrode (11),

said substrate (7) is at least partly removed at the location of the said inductor coil (1) and the said first capacitor electrode (8),

said substrate insulating layer (5) is arranged as a suspended structure for the said first capacitor electrode (8) and the inductor coil (1).

44. (new) An integrated tunable RF resonator according to claim 43, **characterized** in that the dielectric insulating layer (7) is preventing the galvanic contact between the first conducting layer (8) and the second conducting layer (6).

45. (new) A micromechanical tunable capacitor, comprising at least of one counter electrode (601) on a first plate of the capacitor, and at least one active electrode (602) and at least one tuning electrode (603, 604) on a second capacitor plate, **characterized** in that,

the said electrode (601, 602, 603, 604) is a metal film,

at least one of the capacitor plates is arranged to be a flexible and elastic structure,

the said electrodes on at least one of the capacitor plates are covered by an insulating layer (7) to prevent a galvanic

contact between the said electrodes on the first and second capacitor plates.

46. (new) A micromechanical tunable capacitor according to claim 45, **characterized** in that the active electrode (602) is arranged to be positioned further from clamped points and/or sides than at least one tuning electrode (603, 604).

47. (new) A micromechanical tunable capacitor according to claim 45, **characterized** in that the dielectric gap (610) is arranged to be narrower between at least one active electrode (602) and at least one counter electrode (601) than between at least one tuning electrode (603, 604) and at least one counter electrode (601).

48. An integrated tunable RF resonator according to claim 43, **characterized** in that a portion of said second conducting layer is used for forming at least part of the inductor coil.

49. A micromechanical tunable capacitor according to claim 45, **characterized** in that said active electrode and said at least one tuning electrode are formed in the same layer.

REMARKS

**Status of the Claims**

Applicant has amended independent claims 2,3,7-24 and 27-32 to adjust the dependency to new claims 43 and 45 and for consistency. New claims 43-49 are added to accentuate the novel features of the invention for which protection is sought in this application. Claims 2,3, 7-24, 27-32 and 43-49 are submitted for further consideration.